Mathematics ASSOCIATE OF SCIENCE

The **AS degree in Mathematics** will be awarded upon completion of the major course requirements listed below and the General Education requirements for the Associate in Science Degree listed in the Degrees, Programs & Transfer Requirements section of this Catalog.

Career Opportunities

Transfer to 4-year university Tutor Mechanical Designer. Information Technology (IT) Manager. Linux System Administrator. Help Desk Technician. Executive Director. Executive Assistant. Plumber.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Use quantitative reasoning to solve every day mathematical problems in the workplace and in the home.
- Read, write, and critique technical writings and analytical arguments.
- Convey and interpret information through visual representations.

Degree Major Requirements

DEPT/NO.	TITLE	UNITS
MATH 3A	Calculus I	5
MATH 3B	Calculus II	5
MATH 3C	Calculus III	5
MATH 3E	Linear Algebra	3
MATH 3F	Differential Equations	3
Select one course (4 units) from the following:		
MATH 11	Discrete Mathematics (4)	
MATH 13	Introduction to Statistics (4)	4
	Minimum Required Units:	**25**

(Total: 25 units – transfers to math major at both UC and CSU systems)

Mathematics ASSOCIATE OF SCIENCE

Recommended Course Sequence — Option 1 [MATH 1]

	COURSE		UNITS	REQUIREMENT	COA GE AREA
FALL 1	MATH 1	Pre-Calculus (+215 Support Course)	4 or 6	Prereq for Math 3A	4B
	MATH 50	Trigonometry (+216 Support Course)	3 or 4	Prereq for Math 3A	4B
	ENGL 1A ENGL 1AS	Composition and Reading ***or*** Composition and Reading (w/ support)	4 or 5	GE	4A
	COMM 1A COMM 45	Introduction to Speech ***or*** Public Speaking	3	GE	4D
	KIN 54A	Cross Fitness I – Fundamentals	1	Elective	
		Total Number of Units	**15-19**		
SPRING 1	MATH 3A	Calculus I	5	Major	4B
	PSYCH 1A PSYCH 1B	Introduction to General Psychology ***or*** Introduction to General Psychology	3	GE	2
	MUSIC 15A MUSIC 15B	Jazz, Blues and Popular Music in the American Culture[1] ***or*** Jazz, Blues and Popular Music in the American Culture[1]	3	GE	3 & 5
	MATH 13	Introduction to Statistics (+213 Support Course)	4 or 6	Major Elective	4B
		Total Number of Units:	**15-17**		
SUMMER 1	MATH 3B	Calculus II	5	Major	4B
		Total Number of Units:	**5**		
FALL 2	MATH 3C	Calculus III	5	Major	4B
	AFRAM 30 ASAME 45A	African-American History: Africa to 1865[2] ***or*** Asian-American History to 1945[2]	3	Elective	2&5
	SOC 5 PSYCH 18	Minority Groups[1] ***or*** Psychology of Race and Ethnicity in the U.S.[1]	3	Elective	2 & 5
	GEOG 1 BIOL 10	Physical Geography ***or*** Introduction to Biology	3 or 4	GE	1
	LIS 85 CIS 1	Introduction to Information Resources ***or*** Introduction to Computer information Systems	2 or 4	GE	4C
		Total Number of Units:	**16-19**		
SPRING 2	MATH 3E	Linear Algebra	3	Major	4B
	MATH 3F	Differential Equations[3]	3	Major	4B
	ECON 1 ECON 2	Principles of Economics (Macro-Economics) ***or*** Principles of Economics (Micro-Economics)	3	Elective	2
	ANTHR 3 GEOG 2	Introduction to Social and Cultural Anthropology ***or*** Cultural Geography	3	Elective	2
	KIN 54B	Cross Fitness II – Beginning[2]	1	Elective	
	DANCE 60	Ballet I[2]	1	Elective	
	DANCE 68	Modern Dance I[2]	1	Elective	
		Total Number of Units:	**15**		

1 Course may be taken during intersession if offered.

2 Recommended for students who benefit from taking 15 units or more per semester.

3 Prerequisite challenge might be needed for Math 3F if student has taken 3C instead of 3E.

Please meet with a counselor to develop a personalized education plan to help you meet your specific goals.

Mathematics ASSOCIATE OF SCIENCE

Recommended Course Sequence — Option 2 [MATH 3A]

	COURSE		UNITS	REQUIREMENT	COA GE AREA
FALL 1	MATH 3A	Calculus I	5	Major	4B
	ENGL 1A ENGL 1AS	Composition and Reading ***or*** Composition and Reading (w/ support)	4 or 5	GE	4A
	COMM 1A COMM 45	Introduction to Speech ***or*** Public Speaking	3	GE	4D
	MUSIC 15A MUSIC 15B	Jazz, Blues and Popular Music in the American Culture ***or*** Jazz, Blues and Popular Music in the American Culture	3	GE	3 & 5
		Total Number of Units	**15-16**		
SPRING 1	MATH 3B	Calculus II	5	Major	4B
	PSYCH 1A PSYCH 1B	Introduction to General Psychology ***or*** Introduction to General Psychology	3	GE	2
	GEOG 1 BIOL 10	Physical Geography ***or*** Introduction to Biology	3 or 4	GE	1
	LIS 85 CIS 1	Introduction to Information Resources ***or*** Introduction to Computer information Systems	2 or 4	GE	4C
	COUN 30	Personal Growth and Development	3	Elective	2
		Total Number of Units:	**16-19**		
SUMMER 1	MATH 13	Introduction to Statistics	4	Major Elective	4B
		Total Number of Units:	**4**		
FALL 2	MATH 3C	Calculus III	5	Major	4B
	AFRAM 30 ASAME 45A	African-American History: Africa to 1865 ***or*** Asian-American History to 1945	3	Elective	2 & 5
	SOC 5 PSYCH 18	Minority Groups ***or*** Psychology of Race and Ethnicity in the U.S.	3	Elective	2 & 5
	POSCI 1 POSCI 31	Government & Politics in the United States ***or*** Introduction to Public Administration	3	Elective	2
	KIN 54A	Cross Fitness I – Fundamentals[1]	1	Elective	
		Total Number of Units:	**15**		
SPRING 2	MATH 3E	Linear Algebra	3	Major	4B
	MATH 3F	Differential Equations[2]	3	Major	4B
	ECON 1 ECON 2	Principles of Economics (Macro-Economics) ***or*** Principles of Economics (Micro-Economics)	3	Elective	2
	ANTHR 3 GEOG 2	Introduction to Social and Cultural Anthropology ***or*** Cultural Geography	3	Elective	2
	KIN 54B	Cross Fitness II – Beginning[1]	1	Elective	
	DANCE 60	Ballet I[1]	1	Elective	
	DANCE 68	Modern Dance I[1]	1	Elective	
		Total Number of Units:	**15**		

1 Recommended for students who benefit from taking 15 units or more per semester.

2 Prerequisite challenge might be needed for Math 3F if student has taken 3C instead of 3E.

Please meet with a counselor to develop a personalized education plan to help you meet your specific goals.

Mathematics ASSOCIATE OF SCIENCE FOR TRANSFER

The **Associate in Science in Mathematics for Transfer Degree (AS-T)** is designed for students planning to transfer into the mathematics major. Successful completion of the program with a minimum G.P.A. of 2.0 affords students specific guarantees for transfer to the CSU system such as admission to a CSU with junior status, priority admission to their local CSU campus and to a program or major in mathematics or similar major.

Students interested in the AS-T for transfer degree in mathematics should consult with the departmental faculty chair. The AS-T degree will be awarded upon completion of the major course requirements listed below and the CSU General Education breadth or Intersegmental General Education Transfer Curriculum (IGETC) requirements for the Associate in Science Degree listed in the Degrees, Programs & Transfer Requirements section of this Catalog.

Students are required to:

- Complete 60 semester CSU-transferable units.
- Complete the California State University-General Education-Breadth pattern (CSU GE-Breadth); or the Intersegmental General Education Transfer Curriculum (IGETC) pattern.
- Complete a minimum of 18 semester units in the major
- Obtain of a minimum grade point average (GPA) of 2.0.
- Earn a grade of C or higher in all courses required for the major. A "P" (Pass) grade is also an acceptable grade for courses in major if the course is taken on a Pass/No Pass basis.

Career Opportunities

In the modern world, there are many fields that need specialists in mathematics. Careers in mathematics include scientists, researchers, space technicians, mathematics teachers, actuaries and insurance specialists, and people who can combine mathematical knowledge with a scientific, computer, or business background.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Use quantitative reasoning to solve everyday mathematical problems in the workplace and in the home.
- Read, write, and critique technical writings and analytical arguments.
- Convey and interpret information through visual representations..

Degree Major Requirements

DEPT/NO.	TITLE	UNITS
MATH 3A	Calculus I	5
MATH 3B	Calculus II	5
MATH 3C	Calculus III	5

At least one(1) course from Group A
(If a student chooses both, Group B is optional).

GROUP A

MATH 3E	Linear Algebra (3)	3
MATH 3F	Differential Equations (3)	

At least one (1) course from Group B if necessary to complete 21 units for the major.

GROUP B

MATH 11	Discrete Mathematics (4)	4-5
MATH 12	Symbolic Logic (4)	
MATH 13	Introduction to Statistics (4)	
PHYS 4A	General Physics with Calculus (5)	
PHYS 4B	General Physics with Calculus (5)	
PHYS 4C	General Physics with Calculus (5)	

Minimum Required Units: 22-23

CSU General Education or IGETC Pattern	38-41
CSU Transferrable Elective Units (as needed to reach 60 transferable units)	

Total Units Required for Degree: 60

** For the Associate in Science Degree in Mathematics for Transfer, students must complete the IGETC or CSU GE-Breadth Education pattern and elective courses for additional 41-42 units: some units can be double counted in order to stay within the 60-unit requirement for the degree.*

Mathematics ASSOCIATE IN SCIENCE FOR TRANSFER

Recommended Course Sequence — Option 1 [MATH 1]

	COURSE		UNITS	REQUIREMENT	CSU GE AREA
FALL 1	MATH 1	Pre-Calculus (+215 Support Course)	4 or 6	Pre-Req for MATH 3A	B4
	MATH 50	Trigonometry (+216 Support Course)	3 or 4	Pre-Req for MATH 3A	B4
	ENGL 1A/1AS	Composition and Reading (w/ support)	4 or 5	GE	A2
	COUN 24 COUN 57	College Success ***or*** Career and Life Planning	3	GE	E
		Total Number of Units	**14 - 18**		
SPRING 1	MATH 3A	Calculus I	5	Major	B4
	ENGL 5	Critical Thinking in Reading and Writing	3	GE	A3
	COMM 1A COMM 45	Introduction to Speech ***or*** Public Speaking	3	GE	A1
	MUSIC 15A ART 1	Jazz, Blues and Popular Music in the American Culture ***or*** Introduction to Art History	3	GE	C1
	HIST 7A HIST 7B	History of the United States to 1877[1] ***or*** History of the United States since 1865[1]	3	US History	C2
		Total Number of Units:	**17**		
SUMMER SESSION	MATH 3B	Calculus II	5	Major	B4
FALL 2	MATH 3C	Calculus III	5	Major	B4
	GEOG 1 PHYS 10	Physical Geography ***or*** Introduction to Physics	3 or 4	GE	B1
	POSCI 1 POSCI 26	Government and Politics in the United States ***or*** U.S. and California Constitution	3	US/CA Politics	D
	PHIL 1 ENGL 1B	Introduction to Philosophy ***or*** Composition and Reading	3 or 4	GE	C2
		Total Number of Units:	**14 - 16**		
SPRING 2	MATH 3E	Linear Algebra	3	Major, List A	B4
	MATH 3F	Differential Equations	3	Major, List A	B4
	PSYCH 1A COMM 6	Introduction to General Psychology ***or*** Intercultural Communications	3	GE	D
	ANTHR 1 BIOL 10	Introduction to Physical Anthropology ***or*** Introduction to Biology	3 or 4	GE	B2 or B2 & B3
	GEOG 1 ANTHR 1	Physical Geography Laboratory ***or*** Physical Anthropology Laboratory	1	GE	B3
	SOC 5 ECON 2	Sociology of Minority Groups ***or*** Principles of Economics (Micro-Economics)	3	GE	D
		Total Number of Units:	**16 - 17**		

1 This course must be taken at College of Alameda to count for the specific CSU GE Area.

Please meet with a counselor to develop a personalized education plan to help you meet your specific goals.

Mathematics ASSOCIATE IN SCIENCE FOR TRANSFER

Recommended Course Sequence — Option 2 [MATH 3A]

	COURSE		UNITS	REQUIREMENT	CSU GE AREA
FALL 1	MATH 3A Calculus I		5	Major	B4
	ENGL 1A/1AS Composition and Reading (w/ support)		4 or 5	GE	A2
	SOC 5 Sociology of Minority Groups ***or*** ECON 2 Principles of Economics (Micro-Economics)		3	GE	D
	COUN 24 College Success ***or*** COUN 57 Career and Life Planning		3	GE	E
		Total Number of Units	**15 - 16**		
SPRING 1	MATH 3B	Calculus II	5	Major	B4
	ENGL 5	Critical Thinking in Reading and Writing	3	GE	A3
	COMM 1A COMM 45	Introduction to Speech ***or*** Public Speaking	3	GE	A1
	MUSIC 15A ART 1	Jazz, Blues and Popular Music in the American Culture ***or*** Introduction to Art History	3	GE	C1
	HIST 7A HIST 7B	History of the United States to 1877[1] ***or*** History of the United States since 1865[1]	3	US History	C2
		Total Number of Units:	**17**		
FALL 2	MATH 3C	Calculus III	5	Major	B4
	GEOG 1 PHYS 10	Physical Geography ***or*** Introduction to Physics	3 or 4	GE	B1
	POSCI 1 POSCI 26	Government and Politics in the United States ***or*** U.S. and California Constitution	3	US/CA Politics	D
	PHIL 1 ENGL 1B	Introduction to Philosophy ***or*** Composition and Reading	3 or 4	GE	C2
		Total Number of Units:	**14 - 16**		
SPRING 2	MATH 3E	Linear Algebra	3	Major, List A	B4
	MATH 3F	Differential Equations	3	Major, List A	B4
	PSYCH 1A COMM 6	Introduction to General Psychology ***or*** Intercultural Communications	3	GE	D
	BIOL 10 ANTHR 1 ANTHR 1L	Introduction to Biology ***or*** Introduction to Physical Anthropology ***and*** Physical Anthropology Laboratory	4	GE	B2 & B3
	KIN 54B	Cross Fitness II – Beginning	1	Elective	
		Total Number of Units:	**14**		

1 This course must be taken at College of Alameda to count for the specific CSU GE Area.

Please meet with a counselor to develop a personalized education plan to help you meet your specific goals.

Mathematics (MATH)

What is Mathematics? Studying math is an exploration of the "science of numbers and their operations, interrelations, combinations, generalizations, and abstractions and of space configurations and their structure, measurement, transformations, and generalizations." (Merriam-Webster)

At **College of Alameda** we offer you a variety of courses intended for those who want to pursue a degree or certificate in mathematics as well as those who wish to develop quantitative and problem-solving skills for use in other fields. We teach according to the motto:

Education anytime anywhere by offering a wide range of Math classes designed to fit around anyone's busy schedules.

The faculty and staff in mathematics at College of Alameda are dedicated to working hard with you—helping you succeed in a positive atmosphere that is conducive to your learning math in the most enjoyable and competent manner possible.

MATH 1
Pre-Calculus
- 4 units, 4 hours lecture
- Prerequisite: MATH 203 or MATH 211D or MATH 230
- Acceptable for Credit: CSU, UC

Preparation for the calculus sequence or other courses requiring a sound algebraic background: Inequalities, theory of equations, sequences and series, matrices, functions and relations, logarithmic and exponential functions; function concept used as a unifying notion. 1701.00

AA/AS area 4b; CSU area B4, IGETC area 2

MATH 2
Pre-Calculus with Analytic Geometry
- 5 units, 5 hours lecture (GR)
- Prerequisite: MATH 50
- Acceptable for credit: CSU, UC

Advanced algebra and analytic geometry: Linear, quadratic, polynomial, rational, exponential, logarithmic, and inverse functions; determinants, matrices and linear systems; zeros to polynomials, arithmetic and geometric sequences, mathematical induction; permutations and combinations, binomial theorem; vectors, conic sections, translation and rotation of axes, polar coordinates, lines and surfaces in space, quadric surfaces. 1701.00

AA/AS area 4b; CSU area B4, IGETC area 2

MATH 3A
Calculus I
- 5 units, 5 hours lecture (GR)
- Prerequisite: MATH 002; or MATH 001, and MATH 050; or appropriate placement through multiple measure assessment process
- Acceptable for credit: CSU, UC

Theorems on limits and continuous functions, derivatives, differentials and applications: Fundamental theorems of calculus and applications; properties of exponential, logarithmic, and inverse trigonometric functions, and hyperbolic functions. 1701.00

AA/AS area 4b; CSU area B4, IGETC area 2

C-ID MATH 210

MATH 3B
Calculus II
- 5 units, 5 hours lecture (GR)
- Prerequisite: MATH 3A
- Acceptable for credit: CSU, UC

Applications of the definite integral: Methods of integration, polar coordinates, parametric equations, infinite and power series. 1701.00

AA/AS area 4b; CSU area B4, IGETC area 2

C-ID MATH 220

MATH 3C
Calculus III
- 5 units, 5 hours lecture (GR)
- Prerequisite: MATH 3B
- Acceptable for credit: CSU, UC

Partial differentiation: Jacobians, transformations, multiple integrals, theorems of Green and Stokes, differential forms, vectors and vector functions, geometric coordinates, and vector calculus. 1701.00

AA/AS area 4b; CSU area B4, IGETC area 2

C-ID MATH 230

MATH 3E
Linear Algebra
- 3 units, 3 hours lecture (GR)
- Prerequisite: MATH 3A
- Not open for credit to students who have completed or are currently enrolled in MATH 3D.
- Acceptable for credit: CSU, UC

Linear algebra: Gaussian and Gauss-Jordan elimination, matrices, determinants, vectors in R2 and R3, real and complex vector spaces, inner product spaces, linear transformations, eigenvalues, eigenvectors, and applications. 1701.00

AA/AS area 4b; CSU area B4, IGETC area 2

C-ID MATH 250

MATH 3F
Differential Equations

- 3 units, 3 hours lecture (GR)
- Prerequisite: MATH 3B and 3E
- Recommended Preparation: MATH 3C
- MATH 3E plus 3F are equivalent to MATH 3D.
- Not open for credit to students who have completed or are currently enrolled in Math 3D.
- Acceptable for credit: CSU, UC

Ordinary differential equations: First-order, second-order, and higher-order equations; separable and exact equations, series solutions, Laplace transformations, systems of differential equations. 1701.00

AA/AS area 4b; CSU area B4; IGETC area 2

C-ID MATH 240

MATH 11
Discrete Mathematics

- 4 units, 4 hours lecture (GR or P/NP)
- Prerequisite: MATH 3B
- Acceptable for credit: CSU, UC

Discrete mathematics: Mathematical induction, finite series, sets, relations and functions, introduction to trees, combinatorics, algebraic structures, and probability. 1701.00

AA/AS area 4b; CSU area B4, IGETC area 2

MATH 12
Symbolic Logic

- 4 units, 4 hours lecture (GR or P/NP)
- Prerequisite: MATH 203 or MATH 211D

Introduction to symbolic logic: Valid reasoning, logical truth, consistency premises, symbolizing everyday language, general theory of inference for predicate calculus, consistency and independence of axioms, theorems of logic, axiomatic systems, mathematical induction and direct proofs; sentential and predicate logic. 1701.00

AA/AS area 4b, 4e; CSU area B4

MATH 13
Introduction to Statistics

- 4 units, 4 hours lecture (GR)
- Prerequisite: MATH 203 or MATH 206 or MATH 211D or MATH 230 or MATH 240 or appropriate placement through multiple-measures assessment process
- Acceptable for credit: CSU, UC

Introduction to theory and practice of statistics: Collecting data: Sampling, observational and experimental studies. Organizing data: Univariate and bivariate tables and graphs, histograms. Describing data: Measures of location, spread, and correlation. Theory: Probability, random variables; binomial and normal distributions. Drawing conclusions from data: Confidence intervals, hypothesis testing, z-tests, t-tests, and chi-square tests; one-way analysis of variance. Regression and non-parametric methods. 1701.00

AA/AS area 4b; CSU area B4, IGETC area 2

C-ID MATH 110

MATH 15
Mathematics for Liberal Arts Students

- 3 units, 3 hours lecture (GR or P/NP)
- Prerequisites: MATH 203 or 211D or 230 or 240 or equivalent
- Eligible for credit by examination
- Acceptable for credit: CSU, UC

Fundamental ideas underlying modern mathematics: Elements from logic, sets, and number systems; concepts of elementary algebra, geometry, topology, and combinatorics. 1701.00

AA/AS area 4b; CSU area B4, IGETC area 2

MATH 16A
Calculus for Business and Life/Social Sciences

- 4 units, 4 hours lecture (GR)
- Prerequisite: MATH 203 or MATH 211D or Appropriate placement through multiple measures assessment process.
- Recommended Preparation: MATH 1
- Eligible for credit by examination
- Acceptable for credit: CSU, UC

Introduction to analytic geometry and differential and integral calculus of algebraic functions with particular attention paid to simple applications. 1701.00

AA/AS area 4b; CSU area B4, IGETC area 2

MATH 49
Independent Study in Mathematics

- .5-5 units, .5-5 hours lecture (GR or P/NP)
- Acceptable for credit: CSU

In-depth exploration of an area or problem of the student's choice not covered by regular catalog offerings in Mathematics. Student must obtain approval from an appropriate faculty member. For more details, see the section on independent study in the college catalog. 1701.00

MATH 50
Trigonometry

- 3 units, 3 hours lecture (GR)
- Prerequisite: MATH 203 or MATH 211D or MATH 230
- Recommended Preparation: MATH 202
- Not open for credit to students who have completed or are currently enrolled in MATH 52ABC.
- Eligible for credit by examination
- Acceptable for credit: CSU

Introduction to functional trigonometry: Basic definitions, identities, graphs, inverse functions, trigonometric equations and applications, solution of triangles and applications, polar coordinates, complex numbers, and De Moivre's Theorem. 1701.00

AA/AS area 4b; CSU area B4

MATH 201
Elementary Algebra

- 5 units, 5 hours lecture (GR)
- Prerequisite: MATH 225, 250 or 253 or appropriate placement through multiple measures assessment process
- Not open for credit to students who have completed or are currently enrolled in MATH 210ABCD.
- Eligible for credit by examination

Basic algebraic operations: Linear equations and inequalities, relations and functions, factoring quadratic polynomials, solving quadratic equations, fractions, radicals and exponents, word problems, graphing, and number systems. 1701.00

MATH 202
Geometry

- 3 units, 3 hours lecture (GR)
- Prerequisite: MATH 201 or MATH 210D or appropriate placement through multiple-measures assessment process
- Eligible for credit by examination

Introduction to plane geometry emphasizing mathematical logic and proofs: Geometric constructions, congruent triangles, parallel lines and parallelograms, proportions, similar triangles, circles, polygons, and area. 1701.00

AA/AS area 4b

MATH 203
Intermediate Algebra

- 5 units, 5 hours lecture (GR)
- Prerequisite: MATH 201 or MATH 210D or appropriate placement through multiple-measures assessment process
- Recommended preparation: MATH 202
- Not open for credit to students who have completed or are currently enrolled in MATH 211ABCD.
- Eligible for credit by examination

Intermediate algebraic operations: Real number properties and operations; solutions and graphs of linear equations in one and two variables; absolute value equations; advanced factoring; complex numbers; quadratic equations and systems of quadratic equations; conics; determinants; solutions and graphs of first-degree, quadratic, and rational inequalities; exponential and logarithmic functions; and sequences and series. 1701.00

AA/AS area 4b

MATH 213
Support for Statistics

- 2 units, 2 hours lecture (P/NP)
- Corequisite: MATH 13

Competencies and concepts needed in statistics: arithmetic, pre-algebra, elementary and intermediate algebra, and descriptive statistics; descriptive data analysis, solving and graphing linear equations, and modeling with linear functions. Intended for students who are concurrently enrolled in MATH 13. 1701.00

MATH 215
Support for Pre-Calculus

- 2 Units, 2 hours lecture (P/NP)
- Corequisite: MATH 1
- Recommended Preparation: This course is appropriate for students who are confident in their graphing and beginning algebra skills.

Review of the core prerequisite skills, competencies, and concepts needed in pre-calculus: Factoring, operations on rational and radical expressions, absolute value equations and inequalities, exponential and logarithmic expressions and equations, conic sections, functions including composition and inverses, an in-depth focus on quadratic functions, and a review of topics from geometry. Intended for students majoring in business, science, technology, engineering, and mathematics and concurrently enrolled in MATH 1. This course is appropriate for students who are confident in their graphing and beginning algebra skills. 1701.00

MATH 216
Support for Trigonometry

- 1 Unit, 1 hour lecture (P/NP)
- Prerequisite: MATH 50
- Recommended Preparation: This course is appropriate for students who are confident in their graphing and beginning algebra skills.

Review of the core prerequisite skills, competencies, and concepts needed in trigonometry: Geometry, transformations of graphs, trigonometric functions and applications, conic sections, polar coordinates including the complex plane and analytic geometry. Intended for students majoring in science, technology, engineering, and mathematics and who are concurrently enrolled in MATH 50, Trigonometry. This course is appropriate for students who are confident in their graphing and beginning algebra skills. 1701.00

MATH 225
Mathematics for Technicians

- 3 units, 3 hours lecture (GR)
- Prerequisite: MATH 250 or 251D or 253 or appropriate placement based on a multiple-measure assessment process
- Eligible for credit by examination

Mathematics for technicians: Signed numbers, formulas, fractions, English and metric measurements, decimals, accurate readings of scales, errors, simple algebra and geometry, reading graphs, and use of the calculator. 1701.00

MATH 230
Elementary and Intermediate Algebra for Business or STEM majors

- 6 units, 6 hours lecture (GR)
- Prerequisites: MATH 253 or 250 or 225 or appropriate placement through multiple measures assessment process

A combined course in algebra: Systems of equations: inequalities, graphs and functions; radicals, quadratic polynomials, rational expressions; exponential and logarithmic functions, and problem solving, with emphasis on knowledge skills appropriate for students pursuing a major in STEM (Science, Technology, Engineering, Mathematics) or Business. 1701.00

AA/AS area 4b

MATH 250
Arithmetic

- 3 units, 3 hours lecture (GR or P/NP)
- Not open for credit to students who have completed or are concurrently enrolled in MATH 251ABCD.
- Eligible for credit by examination
- Non-degree applicable

Refresher course in the fundamental processes of arithmetic: Whole numbers, fractions, decimals and percents; metric system introduced and incorporated throughout the arithmetic material. 4930.41

MATH 253
Pre-Algebra

- 3 units, 3 hours lecture (GR or P/NP)
- Recommended preparation: Math 250 or appropriate placement through multiple-measures assessment process
- Non-degree applicable

Fundamentals of pre-algebra: Properties of real numbers, factoring and multiples, ratio and proportion, signed numbers, linear equations and formulas, powers and roots, percents and averages, and English and metric measurements. 1701.00

NONCREDIT COURSES

MATH 510
Math for Career and Technical Education

- 0 units, 0.57 hours lecture (satisfactory)

Mathematics contextualized for CTE programs; industry-specific involving arithmetic, formulas, measurement, reading of scales, reading of graphs and use of calculators and/or computers. 4930.12

MATH 521
Algebra 1 Review

- 0 units, 1-5 lecture hours (P/NP)

Review of the California State Standards for Algebra 1: Key components of first year high school algebra; symbolic reasoning and calculations with symbols as applied to solving, graphing equations, functions, and inequalities. 1702.00